

a. Clearly define the decision variables

Number of Collegiate: X_1

Number of Mini: X_2

b. What is the objective function?

$$P(\text{profit}) = 32X_1 + 24X_2$$

c. What are the constraints?

$$3X_1 + 2X_2 \leq 5000$$

$$0.75X_1 + (2/3)X_2 \leq 35 \cdot 40$$

$$0 \leq X_1 \leq 1000$$

$$0 \leq X_2 \leq 1200$$

d. Write down the full mathematical formulation for this LP problem

$$P = 32X_1 + 24X_2$$

$$3X_1 + 2X_2 \leq 5000$$

$$0.75X_1 + (2/3)X_2 \leq 1400$$

$$0 \leq X_1 \leq 1000$$

$$0 \leq X_2 \leq 1200$$